In re of: SA'AR1

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-60 (deleted)

61. (new) A voltage tunable photodetector for sensing combined passive LWIR or MWIR radiation of a scene and active SWIR radiation of a laser source, comprising a quantum well infrared photodetector (QWIP) integrated together with a heterojunction bipolar phototransistor (HBPT).

62. (new) The voltage tunable photodetector of claim 61 wherein said active SWIR radiation is sensed by means of the HBPT, when a first predetermined bias voltage is applied across said voltage tunable photodetector, and said passive LWIR or MWIR radiation is sensed by means of the QWIP, when a second predetermined bias voltage is applied across said voltage tunable photodetector.

63. (new) The voltage tunable photodetector of claim 61 wherein the QWIP includes a stack of epitaxial layers deposited

on a substrate layer and the HBPT includes another stack of epitaxial layers grown on said QWIP.

64. (new) The voltage tunable photodetector of claim 63 wherein said substrate layer is made of a material selected from GaAs and InP.

65. (new) The voltage tunable photodetector of claim 63 wherein the epitaxial layers include a first contact layer arranged underside of the QWIP layers and a second contact layer arranged at the upperside of the HBPT layers.

66. (new) The voltage tunable photodetector of claim 65 wherein the epitaxial layers include a floating contact layer for providing a contact between said QWIP and said HBPT.

67. (new) The voltage tunable photodetector of claim 61 wherein the HBPT includes a stack of epitaxial layers deposited on a substrate layer and the QWIP includes another stack of epitaxial layers grown on said HBPT.

68. (new) The voltage tunable photodetector of claim 67 wherein said substrate layer is made of a material selected from GaAs and InP.

69. (new) The voltage tunable photodetector of claim 67 wherein the epitaxial layers include a first contact layer arranged underside of the HBPT layers and a second contact layer arranged at the upperside of the QWIP layers.

70. (new) The voltage tunable photodetector of claim 69 wherein the epitaxial layers include a floating contact layer for providing a contact between said QWIP and said HBPT.

71. (new) The voltage tunable photodetector of claim 64 wherein said QWIP includes GaAs based quantum wells and AlGaAs based barrier layers.

72. (new) The voltage tunable photodetector of claim 64 wherein said QWIP includes $In_{0.53}Ga_{0.47}As$ quantum wells and InP based barrier layers.

73. (new) The voltage tunable photodetector of claim 64 wherein said QWIP includes $In_{0.73}Ga_{0.27}As_{0.63}P_{0.37}$ quantum wells and InP based barrier layers.

74. (new) The voltage tunable photodetector of claim 61 wherein said HBPT includes:

an emitter constituted by at least one n-type epitaxial layer;

a base arranged downstream of said emitter and constituted by at least one p-type epitaxial layer;

multiple quantum well elements arranged downstream of said base and configured for absorbing the SWIR radiation; and

a collector arranged downstream of said multiple quantum well elements and constituted by at least one n-type epitaxial layer.

75. (new) The voltage tunable photodetector of claim 74 wherein said at least one n-type epitaxial layer of the emitter is a layer based on at least one element selected from the group including AlGaAs and InP.

76. (new) The voltage tunable photodetector of claim 74 wherein said at least one p-type epitaxial layer of the base is a layer based on at least one element selected from the group including GaAs, $In_{0.53}Ga_{0.47}As$ and $In_{0.73}Ga_{0.27}As_{0.63}P_{0.37}$.

77. (new) The voltage tunable photodetector of claim 74 wherein said multiple quantum well elements comprise GaAs based barrier and InGaAs based quantum wells layers.

78. (new) The voltage tunable photodetector of claim 74 wherein said multiple quantum well elements comprise InP barrier and $In_{0.53}Ga_{0.47}As$ quantum wells layers.

79. (new) The voltage tunable photodetector of claim 74 wherein said multiple quantum well elements comprise InP barrier and $In_{0.73}Ga_{0.27}As_{0.63}P_{0.37}$ quantum wells layers.

80. (new) The voltage tunable photodetector of claim 74 wherein said at least one n-type epitaxial layer of the collector is a layer based on at least one element selected from the group including GaAs, $In_{0.53}Ga_{0.47}As$ and $In_{0.73}Ga_{0.27}As_{0.63}P_{0.37}$.

81. (new) The voltage tunable photodetector of claim 74 wherein the HBPT is being operated in a floating base mode.

82. (new) An integrated thermal imager for detecting combined passive LWIR or MWIR radiation of a scene and active SWIR radiation of a laser source, comprising a two-dimensional focal plane array (2D-FPA) constituted by an assembly of voltage tunable photodetectors,

wherein each voltage tunable photodetector integrates a quantum well infrared photodetector (QWIP) together with a

heterojunction bipolar phototransistor (HBPT), thereby forming a pixel element in the 2D-FPA.

83. (new) A method of operating a integrated thermal imager for detecting combined passive LWIR or MWIR radiation of a scene and active SWIR radiation of a laser source, wherein said integrated thermal imager includes a two-dimensional focal plane array (2D-FPA) constituted by an assembly of voltage tunable photodetectors, wherein each voltage tunable photodetector integrates a quantum well infrared photodetector (QWIP) together with a heterojunction bipolar phototransistor (HBPT), thereby forming a pixel element in the 2D-FPA,

the method comprising:

(a) obtaining said passive LWIR or MWIR radiation along with said active SWIR radiation, and converting the radiation into photo-current;

(b) applying a first predetermined bias voltage across said voltage tunable photodetector for sensing said active SWIR radiation by means of the HBPT,

(c) applying a second predetermined bias voltage across said voltage tunable photodetector for sensing said passive LWIR or MWIR radiation by means of the QWIP; and the scene and

(d) creating an image of at least a portion of the scene and the laser source.

84. (new) The method of claim 83 wherein said integrated thermal imager being operable in at least one imaging mode selected from a synchronized imaging mode, a non-synchronized imaging mode, an imaging of the pure active SWIR radiation and an imaging of the pure passive LWIR or MWIR radiation.